

Marine fish farming in India – Failed expectations?

Industrial mariculture in India with recourse to domestication, breeding and raising is on a low key. To meet the fisheries demand by 2010, India must increase annual production to 7–8 million tonnes (mt). Marine fishery capture is 3 mt and inland aquaculture must increase from 2.5 to 5 mt by 2010. India must diversify, innovate and intensify culture methods to achieve this¹.

Research in marine fish culture is at an advanced level for a few species, but commercial farming is in infant stages of development. India has perfected the captive breeding technology for *Holothuria scabra*². Late entrants (Korea, Malaysia, Philippines and Indonesia) commercialized the Indian methodologies.

India sought Asian seabass techniques from the Department of Primary Industries, Australia for adoption at the Rajiv Gandhi Centre for Aquaculture Development (RGCA)³, Chennai. Global progress in reproduction and rearing protocols for cobia, mahi mahi, golden trevally and snapper were not site-specifically studied for Indian eco-climates. Technology for disease control and stable oceanic farming condition that native species need to grow in high density is wanting.

Yellow-fin seabream was identified as promising for India⁴, if Middle East ocean farming technologies were perfected in Indian Ocean-front Oman seas. Global progress in reproduction and rearing protocols for Cobia, mahi mahi, golden trevally and snapper were not site-specifically studied for Indian eco-climates. Market globalization cannot feed Indians with marine fish but only increases threats to sustainability of fish resources. Export-oriented development with short-term interests is not sustainable. The gap between scientists and

farmers has widened due to poor knowledge on marine fish breeding. Low priority is given to porgy, pompano and pomfret hatchery development in India, even with daily export of fresh-chilled pomfret to the Middle East. Fish farming research must shift from Government funded to public/private-funded companies. The latter is sure to optimize private use at the expense of public interest. RGCA recently sought technology to culture Nile tilapia (*Oreochromis niloticus*) and red tilapia. Future farming should include greater investments only in Indian species, as a strategy to conserve local stocks and guarantee supplies to regional consumers. With capture fisheries operating at the maximum level of exploitation or beyond for kingfish, thread-fin bream, Indian mackerel and red snapper, new culture inputs are required from native aquaculture to meet the increasing demands.

Understanding causes of past problems and present evolution is useful when looking into the future. Full control over the life cycle (egg, larvae, fingerlings and reproducing adults) of increasingly-landed yellow-fin, blue-fin sea bream and tuna is far from realization, despite growth in bream hatchery technology in Kuwait, Bahrain, Australia and Japan, the latter two also adept in tuna breeding. Indian coastal states need to submit a blueprint of potential fish culture sites for evaluation and implementation. India can learn from the past mistakes, do R&D on multiple species and renew beneficial dialogues with relevant marine fish farming global expertise.

The future of marine finfish farming in India also relies on economic development in low-impact aquaculture. Whether and how aquaculture capacity will increase in future depends on progress

made in fisheries' legislations and their governance, technical advancement, nation-wide societal rural entrepreneurship programmes, integration policies for coupling shoreline capture fisheries with mariculture and farming the edge of the sea. The pressure exerted by fish consumers, rich or poor will increase international and national demand. Policy makers and planners are responsible for negotiating present and future conflicts between export earnings and local food security. National-level fishery policy is a victim of political forces and market pressures. Traditional users should continue enjoying their common property rights as they harm environmental resources to a lesser extent. Institutional resources (training and visit with seed/feed) from Government are needed. NGOs can promote rural human resource with maricultural employment.

Fulfilling the present and future needs through technology and innovation, applied at the grass-roots level on fish farmers is the pressing theme for Indian aquaculture.

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C. M. JAMES
M. R. KITTO*

*Mariculture and Fisheries Department,
Kuwait Institute for Scientific Research,
Box 1638,
Salmiya 22017, Kuwait
e-mail: drkitto@yahoo.com